

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 10/674,703
Applicant: O'Meara et al.
Art Unit: 1765
Title: **METHOD AND PROCESSING SYSTEM FOR MONITORING
STATUS OF SYSTEM COMPONENTS**
Attorney Docket: FKL-002
Confirmation No.: 4557

Cincinnati, Ohio 45202

April 30, 2007

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Commissioner for Patents
P.O. Box 1450
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Sir:

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicants request review of the December 29, 2006 rejections in the above-identified application. No amendments are being filed with this request, and it is being filed concurrently with a Notice of Appeal and a request for a one-month extension. The review is requested for the reasons set out herein below.

REMARKS/ARGUMENTS FOR REVIEW

Claims 1-2, 5-18, 20-21, 23-24 and 30-32 are pending and stand rejected. Claims 1, 5-9, 12-13, 17, 20-21 and 31-32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Yin et al. and claim 2 stands rejected under 35 U.S.C. § 103 as being obvious over Yin et al. Claims 10-11, 14-16, 18, 23-24 and 30 stand rejected under 35 U.S.C. § 103 as being obvious over Yin et al. in view of one of Tsai et al., Chow et al., Kim et al., or Nakata et al. Review is requested for all claims; however, Applicants will focus their comments on independent claims 1 and 31 and dependent claim 2, and reserve comments on the additional dependent claims and/or additional arguments if the appeal proceeds.

All rejections rely on Yin et al. as the sole or primary reference. The primary issue of fact for which there is clear error relates to the term "system component" in Applicants' claims. Referring to Applicants' Amendment After Final filed October 25, 2006, Applicants amended

claims 1 and 31 to specify that the system component is in a processing system for processing semiconductor substrates, and that the system component is different than the semiconductor substrates being processed in the processing system. In the final Office Action dated December 29, 2006, at page 2, the Examiner takes the position that Yin et al. teaches the method of exposing a protective layer on a wafer substrate to an activated cleaning gas, and that the protective layer on the wafer substrate is a system component. At page 9 of the final Office Action, under "Response to Arguments", the Examiner states that "the term substrate will be interpreted as being the wafer start material, i.e. the bottom most layer of the wafer which existed before the wafer fabrication steps for forming an IC occur." Thus, Examiner refuses to distinguish between the semiconductor substrates that are processed in the processing system and the system components that constitute the processing system. Examiner's interpretation of system component is asserted to be a clear error in fact.

"System" is defined as: an assemblage or combination of things or parts forming a complex or unitary whole (Dictionary.com Unabridged v1.1); a group of devices or artificial objects or an organization forming a network especially for distributing something or serving a common purpose (Webster); A functionally related group of elements, especially: ... d. A group of interacting mechanical or electrical components; ... f. A network of related computer software, hardware, and data transmission devices (American Heritage); a set of connected items or devices which operate together (Cambridge). Thus, from a purely definitional standpoint, a processing system may be understood to be an assembly of several parts or components integrated for purposes of accomplishing a process. Thus, a system component, i.e., a component of the system, is one of the parts of the assembly that makes up the processing system.

Persons of ordinary skill in the art of semiconductor processing refer to "system components" as being the components that make up the processing system, such as the components listed in dependent claim 2, which is consistent with the ordinary meanings of the term as described above. It is also known for the system components to further have protective coatings thereon. "System component" is distinguished from the work-pieces or substrates that are inserted into the processing system, subjected to a process, and then removed from the processing system after processing. The semiconductor substrates are placed in the processing

system for one or more of a variety of processes, such as deposition of materials onto a substrate layer, removal of the material from the substrate, or alteration of the material that forms part of the substrate. The term semiconductor substrate is understood to refer to an underlying substrate material upon which layers may be deposited, as well as the overall semiconductor part before and after processing. The substrate does not form part of the assembly of components integrated for purposes of accomplishing a process, but rather, is the very thing upon which the process is performed. Thus, it is error on the Examiner's part to equate a system component and a semiconductor substrate, and further, to limit the term substrate to only the bottom most layer of the semiconductor substrate.

As set forth on pages 7 to 9 of Applicants' Response dated October 25, 2006, in Yin et al., the semiconductor substrate is placed within an etching chamber. That semiconductor substrate comprises an underlying substrate material and a protective layer on the underlying substrate material. Yin et al. then monitors erosion products derived from the etched semiconductor substrate, and in particular, a gaseous species of an underlying substrate material, thereby indicating that the overlying layer has been removed. Once etching of the semiconductor substrate is complete, the substrate is removed from the processing system. The only species that are monitored are those of materials that form the semiconductor substrate, whether it is the bottom most layer or overlying protective layer. No monitoring of the processing system for release of erosion products from the system components that are different from the semiconductor substrate being processed is disclosed by Yin et al.

Examiner's rejection relies on ignoring the clear meaning of the terms of the claim and perverting them to make the claims read on the reference. This is a clear error in fact. For there to be anticipation under § 102(e), each and every element of the claim must be present, and Yin et al. does not teach monitoring erosion products from system components. Therefore, there can be no anticipation of claims 1 and 31, or any of their dependent claims.

With respect to claim 2 specifically, which is rejected as being obvious over Yin et al., there is no *prima facie* case of obviousness, which is an error in fact. As set forth at pages 9-10 of the Amendment dated October 25, 2006, at Col. 14, lines 17-19, Yin et al. describes a chamber cleaning and conditioning process to remove residues from system components, stating specifically that the process should remove the residues "substantially without eroding the walls

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and components in the chamber." This is evidence that Yin et al. too recognizes the distinction between components in the chamber and the semiconductor substrates that are processed within the chamber. As explained in Applicants' previous response, Yin et al. teaches that the cleaning and conditioning process should not etch the chamber walls and components so as to damage the underlying structures. Therefore, Yin et al. teach against monitoring erosion products of the system components. Claim 2 recites various system components, the erosion products of which are to be monitored in the claimed method. Since Yin et al. teaches that only residues on the system components should be removed without any removal of the underlying system component, claim 2 cannot be obvious in view of Yin et al. which teaches against the method. Examiner's position is an error in fact, since there is no *prima facie* case of obviousness in view of this teaching against.

In addition to the arguments and references to the prosecution history made herein, Applicants believe a full understanding of the issues and errors in fact can be appreciated by review of pages 7-11 of Applicants' Amendment dated October 25, 2006 and Examiner's Final Rejection dated December 29, 2006, pages 2-5 and 9-11 of the Detailed Action.

As evidenced above, there is clear error in the rejections. The Yin et al. reference does not teach each and every element of claims 1, 5-9, 12-13, 17, 20-21 and 31-32, and there can be no anticipation unless each and every element is taught by the reference. In addition, there is no *prima facie* case for claims 10-11, 14-16, 18, 23-24 and 30, as there is no teaching, suggestion or motivation whatsoever by Yin et al. or any of the secondary references to monitor erosion products of the system components. Hence, Applicants respectfully assert that the rejections are plainly in error, and Applicants should not be forced through the time and expense of a full-blown appeal.

Respectfully submitted,
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